UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,237	10/20/2003	Eric P. Krantz	436711	4932

30955 7590 12/04/2006

LATHROP & GAGE LC
4845 PEARL EAST CIRCLE
SUITE 300
BOULDER, CO 80301

EXAMINER	
WILLIAMS, DON J	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,237	KRANTZ ET AL.	
	Examiner	Art Unit	
	Don Williams	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments with respect to the rejection(s) of claim(s) 1-43 have been fully considered and are persuasive. Therefore, the finality of the previous Office Action has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 7-12, 14-17, 19-24, and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goff et al (4,896,965).

As to claims 1, Goff et al disclose a (fig. 1, column 4, lines 32-45) an optical sensor apparatus (monitoring system, 10) that has a first detector elements (30) and second detector elements (30) separated by a first non-active gap (spacing between fibers) having a first width; a first optical fiber (26) having a first end oriented toward a field of view and a second end oriented toward a sensor segment (30) of the first linear array of sensor segments (30); and a second optical fiber (26) having a first end oriented toward the field of view and located a first distance, less than the first width from the first end of the first optical fiber (26) and a second end oriented toward a sensor segment of the second linear array of sensor segments (30) and located a

second distance greater than the first distance from the second end of the first optical fiber (26). Goff et al fail to explicitly disclose enhancing optical congruence of the first linear array and second linear array in relation to each other. However, it would have been obvious for one of ordinary skill in the art to modify or adjust the monitoring system of Goff et al to improve the uniform conversion of the transmitted light into electrical signals corresponding to the detectors inorder to provide a clear and precise image of the object which is indicative of optical congruence between the detectors.

As to claim 2, Goff et al disclose that the (fig. 1, column 4, lines 32-45) optical sensor (10) has a third detector element (30) separated from the second detector (30) by a second non-active gap (spacing between fibers) having a second width, a third optical fiber (26) having a first end oriented toward the field of view and located a third distance less than the second width from the first end of the second optical fiber (26) and a second end oriented toward a sensor segment of the third detector element (30).

As to claim 3, Goff et al disclose a (fig. 1, column 4, lines 46-50) first color filter (28a) positioned to filter light reaching the first detector element (30), a second color filter (28b), different from the first color filter (28a), positioned to filter light reaching the second detector element (30); a third color filter (28c), different from the first color filter (28a) and the second color filter (28b), positioned to filter light reaching the third detector element (30).

As to claim 5, Goff et al disclose that the first ends of the first and second optical fibers (26) are arranged in a single column corresponding to the common end (24), (figure 1, column 4, lines 32-45).

As to claim 7, Goff et al disclose that the field of view is along a plane intersecting the common end (24) of each of the first ends of the first and second optical fibers (26), (figure 1; column 4, lines 32-45).

As to claims 8-10, Goff et al disclose the optical sensor is a linear sensor since no structural foundation is provided to indicate the optical sensor is actually a "linear sensor", this limitation is considered intended use and is afforded no patentable weight.

As to claims 11, 12, Goff fails to disclose the exact detecting element used; however, such a modification would have been obvious for one of ordinary skill in the art to make, since they are functionally equivalent means of detecting light.

As to claim 14, Goff et al disclose one lens (18) that is located between the field of view and the first ends of first and second optical fibers (26), (figure 1, column 4, lines 40-50).

As to claim 15, Goff et al disclose a (fig. 1, column 4, lines 32-45) an optical sensing apparatus (monitoring system, 10) that has a first detector element (30) and a second detector element (30) separated by a first non-active gap having a first width; a first optical fiber (26) having a first end oriented toward a field of view and a second end oriented toward a sensor segment (30) of the first detector element (30); and a second optical fiber (26) having a first end oriented toward the field of view and located a first distance, less than the first width from the first end of the first optical fiber (26) and a second end oriented toward a sensor segment of the second detector element (30) and located a second distance greater than the first distance from the second end of the first optical fiber (26) and a third optical fiber (26) having a first end oriented toward a field of

view and located a third distance less than the second width from the first end of the second optical fiber (26) and a second end oriented toward a detector element (30) of the third detector element (30) and located a fourth distance greater than the third distance from the second end of the second optical fiber (26). Goff et al fail to explicitly disclose linear array of sensors. It is well known in the art to use linear sensor array as means of detecting optical signals. It would have been obvious for one of ordinary skill in the art to replace the detector elements of Goff et al with the linear array of sensors since they are functionally equivalent means of detecting optical signals in order to improve the output signal which enhancing the signal to noise ratio of the system.

As to claim 16, Goff et al disclose that first, second, and third optical fibers (26) include a plurality of first, second, and third optical fibers (26), (figure 1, column 4, lines 35-40).

As to claim 17, Goff et al disclose that first ends of first, second, and third optical fibers (26) are arranged in a single column via a common end (24), (figure 1, column 4, lines 32-40).

As to claims 19, 21, 23, 24, Goff et al disclose a (fig. 1, column 4, lines 35-50) plurality of optical fibers (26) having a first end and a second end, detector elements (30), a first distance less than non-active gap, a second distance greater than first distance from first optical fiber (26) such that second end of first optical fiber (26) and second end of the second optical fiber (26) are spaced to align with a first detector (30) and a second detector (30), respectively of optical sensor (30) via filters (28a-28d). Goff et al fail to explicitly disclose a first fiber optic faceplate and a second fiber optic

faceplate. It is well known in the art to use faceplates on optical fibers as a means of adding stability to the fiber arrangement. It would have been obvious for one of ordinary skill in the art to modify Goff et al to use fiber optic faceplates to improve the stability and alignment of the optical fibers at both input and output ends in order to acquire uniform transmission of light corresponding to the plurality of optical fibers to limit interference from extraneous light.

As to claim 20, the modified Goff et al disclose a plurality of optical fibers (26) and a plurality of second optical fibers (26), (figure 1, column 4, lines 32-35).

As to claim 22, the modified Goff et al disclose that the first ends of first, second, and third optical fibers (26) are arranged in a single column via the common end (24), (figure 1, column 4, lines 35-45).

As to claims 25, 26 the modified Goff et al disclose the optical sensor is a linear sensor since no structural foundation is provided to indicate the optical sensor is actually a "linear sensor", this limitation is considered intended use and is afforded no patentable weight.

As to claims 27,33, the modified Goff fails to disclose the exact detecting element used; however, such a modification would have been obvious for one of ordinary skill in the art to make, since they are functionally equivalent means of detecting light.

As to claim 28, the modified Goff et al disclose a plurality of color filters (28a-28d) used with the plurality of optical fibers (26) to separate colors (wavelengths) provided to arrays of the optical sensors (30), (Abstract, figure 1, column 4, lines 46-65).

As to claims 34, 35, the modified Goff et al disclose an array of sensors (30), (figure 1). The modified Goff et al fail to explicitly disclose a matrix sensor. It would have been obvious for one of ordinary skill in the art to use the array of sensors as one matrix sensor to improve the conversion of the transmitted light into an optical signal which correspond to a clear and precise linear image of an object.

As to claim 36, Goff et al disclose a (fig. 1, column 4, lines 32-45) optical sensor apparatus (monitoring system, 10) that has a first detector segment (30) and a second detector segments (30) separated by a first non-active gap (space between fibers) having a first width; a first optical fiber (26) having a first end oriented toward a field of view and a second end oriented toward a sensor segment (30) of the first detector element (30); and a second optical fiber (26) having a first end oriented toward the field of view and located a first distance, less than the first width from the first end of the first optical fiber (26) and a second end oriented toward a second detector element (30) and located a second distance greater than the first distance from the second end of the first optical fiber (26) and a third optical fiber (26) having a first end oriented toward a field of view and located a third distance less than the second width from the first end of the second optical fiber (26) and a second end oriented toward a third detector element (30) and located a fourth distance greater than the third distance from the second end of the second optical fiber (26). Goff et al fail to explicitly disclose enhancing optical congruence of the first linear array and second linear array in relation to each other. However, it would have been obvious for one of ordinary skill in the art to modify or adjust the monitoring system of Goff et al to improve the uniform conversion of the

transmitted light into electrical signals corresponding to the detectors inorder to provide a clear and precise image of the object which is indicative of optical congruence between the detectors.

As to 37, Goff et al disclose a plurality of color filters (28a-28d) used with the optical fibers (26) to separate the colors (wavelengths) provided to the optical sensors (30), (Abstract, figure 1, column 4, lines 35-65).

As to claims 38-39, Goff et al disclose the optical sensor is a linear sensor since no structural foundation is provided to indicate the optical sensor is actually a "linear sensor", this limitation is considered intended use and is afforded no patentable weight.

As to claim 40, Goff fails to disclose the exact detecting element used; however, such a modification would have been obvious for one of ordinary skill in the art to make, since they are functionally equivalent means of detecting light.

Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goff et al in view of Fisher et al (4,189,207).

As to claim 29, Goff et al disclose (figure 1, column 4, lines 32-45) optical sensors (30), a first optical fiber (26) and a second optical fiber (26) connected to each other at the common end (24) such that a first end of first optical fiber (26) and a first end of second optical fiber are oriented toward a field of view. Goff et al fail to disclose a first spacer mounted between the second ends of first and second optical fibers. Fisher and Goff are related as fiber optical arrangements. Fisher et al disclose spacers (51-54) being used to separate and mount the optical fibers (45, 46, 47). It would have been

obvious for one of ordinary skill in the art to modify Goff et al to include the arrangement as disclosed by Fisher et al to add stability to the arrangement and improve transmission of light throughout the optical fibers.

As to claim 30, Goff et al disclose a third optical fiber (26) having a first end oriented toward a field of view and a second end located such that the second end of the third optical fiber (26) and the second end of the second optical fiber (26) are further apart than first end of the third optical fiber (26) and first end of the second optical fiber (26) which correspond to the optical sensors (30), (figure 1, lines 32-45). Goff et al further disclose that Fisher (fig. 4, column 2, lines 52-65) sets forth a second spacer (51-54).

As to claim 31, Goff et al disclose that the first ends of the first, second, and third optical fibers (26) are arranged in a single column, (figure1).

As to claim 32, Goff et al disclose a plurality of color filters (28a-28d) used with the optical fibers (26) to separate colors (wavelengths) provided to elements of the optical sensors (30), (figure 1, column 4, lines 35-65).

Claims 4, 6, 13, 18, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goff et al in view of Frankel (4,910, 395).

As to claim 4, Goff et al disclose first ends of first and second optical fibers (26), (figure 1, column 4, lines 32-45). Goff et al fail to disclose a first fiber optic faceplate configured to accommodate the first ends of the first and second optical fibers. Goff et al and Frankel are related as fiber optic arrangement. Frankel discloses a transparent

beam splitter or a triangular pyramid (1) that is used to position the first ends of first, second, and third optical fiber links (4a, 4b, 4c), (figure 1, column 2, lines 21-40). It would have been obvious for one of ordinary skill in the art to modify Goff et al to use a beam splitter or triangular pyramid as a fiber optic faceplate to secure the optical fibers and improve the receipt of the light transmitted to first ends of the first, second, and third optical fibers.

As to claim 6, Goff et al disclose optical fibers (26). Goff et al fail to disclose that the optical fibers (26) are mounted within a block structure. Frankel discloses that optical fibers (4a-4c) are positioned within transparent block (transparent beam splitter or triangular pyramid, 1), figure 1, column 2, lines 25-35). It would have been obvious for one of ordinary skill in the art to modify Goff et al to include a transparent beam splitter or triangular pyramid as disclosed by Frankel as a means of mounting the fibers to improve the integrity and stability of the fibers inorder to increase uniform light transmission throughout each fiber.

As to claims 13, 18, 41, Frankel further discloses (fig. 1, column 2, lines 30-35) * the second ends of the first optical fiber (4a), the second optical fiber (4b), and the third optical fiber (4c) are mounted to the first, second and third detector elements (5a, 5b, 5c).

Claims 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hegyi (6,191,413).

As to claim 42, Hegyi discloses (fig. 5, column 6, lines 8-29; fig. 7, column 6, lines 35-45) means (diffusers, 47, 48 or lenses, 71, 72) for obtaining optical information from a field of view; and means (hollow conduit or tube, 40) for orienting the optical information to two detector elements (44, 45) of at least one optical detector (42) so as to enhance an optical congruence capability of the optical sensor (42), (column 3, lines 30-50). Hegyi fails to explicitly disclose linear sensor elements. It is well known in the art to use linear array as a means of detecting optical signals. It would have been obvious for one of ordinary skill in the art to replace the detectors of Hegyi with the linear sensors elements since they are functionally equivalent means of detecting optical signals to improve the overall performance of the system by enhancing the signal to noise ratio.

As to claim 43, Hegyi discloses means (housing structure) as defined in fig. 6 and fig. 7 used for positioning means (a generalized tube) for obtaining in relation to the (fig. 5) detector (44, 45), (column 6, lines 30-45).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Don Williams whose telephone number is 571-272-8538. The examiner can normally be reached on 8:30a.m. to 5:30a.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800